Phragmites on Great Lakes Shorelines

Mechanical Treatment/Mowing

DEQ Water Resources Division
Anne Hokanson, Coastal Wetland Ecologist

Coastal Wetlands

Great Lakes coastal marshes are a special type of emergent wetland. These extremely productive, and rare systems are critical to Michigan's fish, wildlife, and migratory birds.

The vegetation of the marshes anchors sands of the beaches during high water periods, providing the most effective protection possible from the erosive impacts of the waves and ice of the Great Lakes.

32 of 36 species of Great Lakes fish depend upon coastal marshes for reproductive success.

At least 41 state listed, threatened, and endangered species of animals depend upon wetlands at some point in their life cycle.

Background

- Coastal Wetlands
- *Water Levels*
- Shoreline Management
  - 2003
  - 2007
    - GP

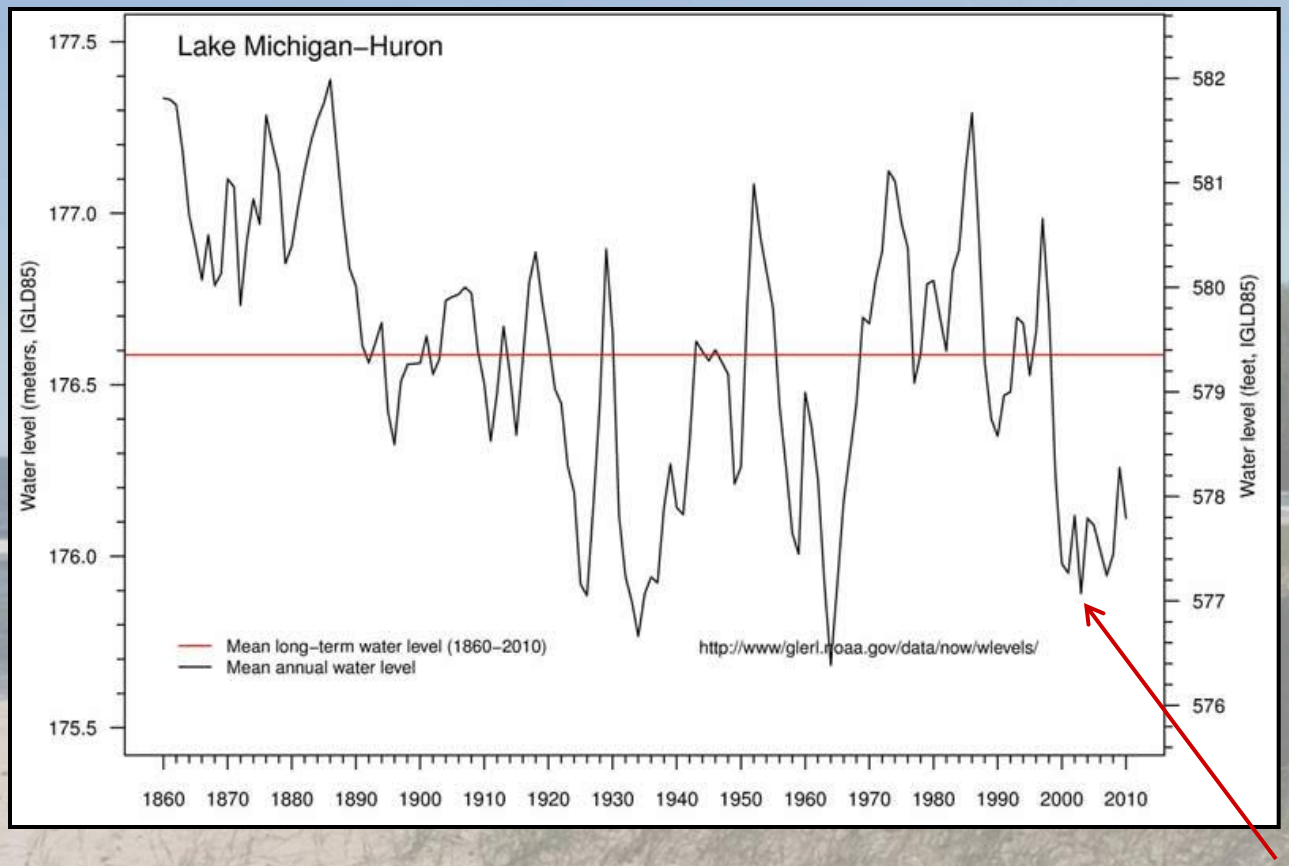
Management Recommendations

- Chemical then Mechanical
- Techniques
- Control plan
- Materials & Outreach

Recent Legislation

- Content
- Possible effects on Phragmites
- Next steps

Great Lakes Water Level Fluctuations

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Shoreline Management - 2003

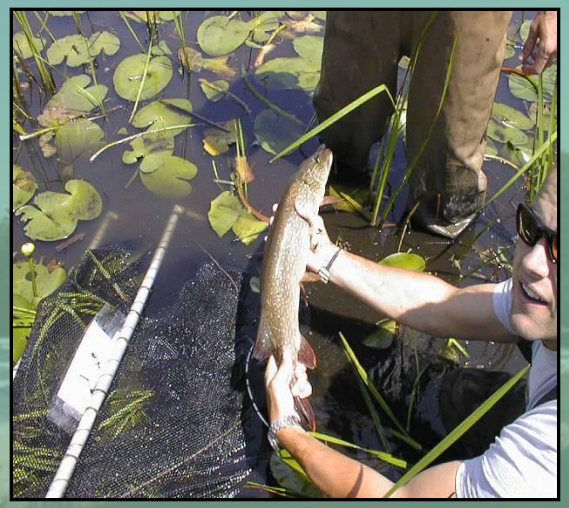
In 2003, the Michigan Legislature passed 2003 PA 14, which exempted certain shoreline management activities from wetland and Great Lakes bottomlands protection, through November of 2007. These included:

- Mowing the width of the riparian property or 100 feet, whichever is less
- Leveling of sand in areas free of vegetation
- Manual removal of vegetation

- Grooming sand in areas free of vegetation
- Construction and maintenance of a sand path

Shoreline Management - 2003

As part of the 2003 amendments, the Legislature required the Department of Environmental Quality (DEQ) to evaluate the ecological impacts of vegetation removal and report back to the Governor and the Legislature. The results of the study indicated:



- Chemical and physical changes in the water.
- Negative impacts larval fish, particularly game fish.
- Significant reduction in invertebrate populations near groomed or mowed areas; important food source for many fish species.
- The negative impacts to fish and invertebrate habitat extends into adjacent marshes up to 150 feet on either side of groomed or mowed areas.
- Vegetation removal increases sand movement and erosion, though further study was called for.
- Loss of native plants, which provide important shoreline stabilization functions. This also led to recolonization by invasive species more rapidly than native plants.

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Shoreline Management - 2007

Shoreline Management Policy Workgroup

In preparation for the expiration of the beach maintenance exemptions, the DEQ formed the Shoreline Management Policy Workgroup, which consisted of representatives from a number of different state and federal resource agencies and citizen groups such as Save Our Shoreline and Michigan Environmental Council.

This workgroup was charged with determining the best way to protect the ecological values of Great Lakes shorelands, while continuing to recognize landowner interests. They reviewed the results of the ecological study, and considered public interest in these coastal areas.

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General Permit - 2007

General Permit Category for Limited Shoreline Management Activities

- *Mowing for Invasive Species Management with a control plan*
- Limited mowing for:
  a. a path;
  b. a recreational area;
  c. maintenance of previously mowed areas in Saginaw Bay and Grand Traverse Bay
- Leveling or grooming of sand in areas free of vegetation
- Manual removal of vegetation
- Construction of a sand path

GENERAL PERMIT CATEGORY FOR
LIMITED GREAT LAKES SHORELINE MANAGEMENT ACTIVITIES

August 1, 2007

IMPORTANT: WRITTEN AUTHORIZATION IS REQUIRED PRIOR TO COMPLETING ANY OF THE ACTIVITIES DESCRIBED BELOW. Please review the General Permit procedures outlined in this document.

Issued Under Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451 as amended (NREPA), being Section 324.30301 to 324.30323 of the Michigan Compiled Laws, Annotated

And

Part 325, Great Lakes Submerged Lands, of the NREPA, being Section 324.325.01 to 324.32516 of the Michigan Compiled Laws, Annotated

BACKGROUND INFORMATION

PURPOSE

This General Permit (GP) category is intended to facilitate activities for limited shoreline management along the Great Lakes coast that are expected to have only a minor impact on wetlands and the Great Lakes bottomlands and that can, therefore, be reviewed through a simplified permit application process. This GP will allow the Michigan Department of Environmental Quality (MDEQ) to evaluate applications for permits without additional public noticing, thereby reducing the cost of the permit process for applicants proposing minor activities, and the costs of administering the program, while continuing to protect wetland and bottomland resources.

LEGISLATIVE AUTHORITY

Great Lakes Shoreline Management
MDEQ General Permit and
USACE Regional Permit
Application Form

Property Owner

Agent/Contractor

Project Location and Description

Activities in Areas Free of Vegetation:

Great Lakes Shoreline Management Application

Allowed a simplified permit process and a reduced fee.

A simpler “Short Form” application was created for these projects.

The GP was set to expire on August 1, 2012.

Recommended Phragmites Management

1. Chemical Treatment – Herbicide in late summer/early fall (Glyphosate and/or Imazapyr)

2. Mechanical Treatment – Moderate height (>6”) in late fall/winter

   - Mowing is most common, easiest for private landowners
   - Prescribed fire – can be very effective, eliminates most of the thatch increasing sunlight penetration and stimulating growth of many native seeds in the soil
   - Flooding – water level control in dyked systems can also be very effective, but this technique is not feasible for most shoreline areas

3. Follow-Up Spot Treatment – Targeted herbicide application of re-growth sprouts is often necessary in subsequent years.

4. Monitoring – Vegetation monitoring can quickly identify Phragmites re-growth, or invasion of other opportunistic invasive species which often occurs following treatment (Narrow-leaf Cattail, Reed Canary Grass, etc.)

Recommended Mechanical Treatment Techniques

Mowing

- How should the appropriate mowing equipment be chosen?
  - Depends on the size and wetness of site

Weed whips and hand tools:
dry or wet sites with low density

Small mowers:
dry, low density sites

Brush cutters:
dry or frozen high density sites

- What is the goal of mechanical treatments?
  - Remove dead stems
  - Promote native plant growth
  - Aid in identifying areas of regrowth in subsequent season.

Mower blades should be set to a high position, and when possible mowing should occur in the winter, to minimize impacts to small animals and native plants.

Recommended Mechanical Treatment Techniques

Prescribed Fire

For areas of large, dense stands of Phragmites. Only where it can be implemented safely, as Phragmites burns very fast and hot.

- To be conducted the year following herbicide treatment:
  a. Late Summer (mid-July – August)
  b. or Winter (January – Spring green-up)
- Without herbicide treatment first, fire can encourage rhizome growth and Phragmites spread.

Recommended Mechanical Treatment Techniques

Flooding

For areas with water level control structures, such as some wildlife management wetlands or constructed mitigation wetlands. Only where it can be implemented safely, as water level manipulation in natural wetlands can cause significant harm to native plants and animals, and may violate wetlands protection laws.

Flooding is used as an additional tool after the standard herbicide treatment and mowing or fire. It can increase the success of Phragmites management efforts, and promote re-vegetation of native emergent plant species.

Elements of a Control Plan

Control Plan:

1. Describe existing phragmites stand.
2. Average and maximum depth of water that is normally present in the treatment area.
3. A description of the type of mechanical equipment to be used in the project
4. The type of herbicide to be used and the file number or copy of the application to the ANC program.
5. A treatment schedule including dates of proposed herbicide treatment and dates of proposed mechanical treatment.

Overall Site Plan:

1. Dimensions of the property.
2. Approximate location of the ordinary high watermark.
3. Approximate location of the water's edge.
4. Dimensions of the treatment area.
5. Any areas that are dominated by plant species other than phragmites.

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Management Recommendations

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- *Control plan*
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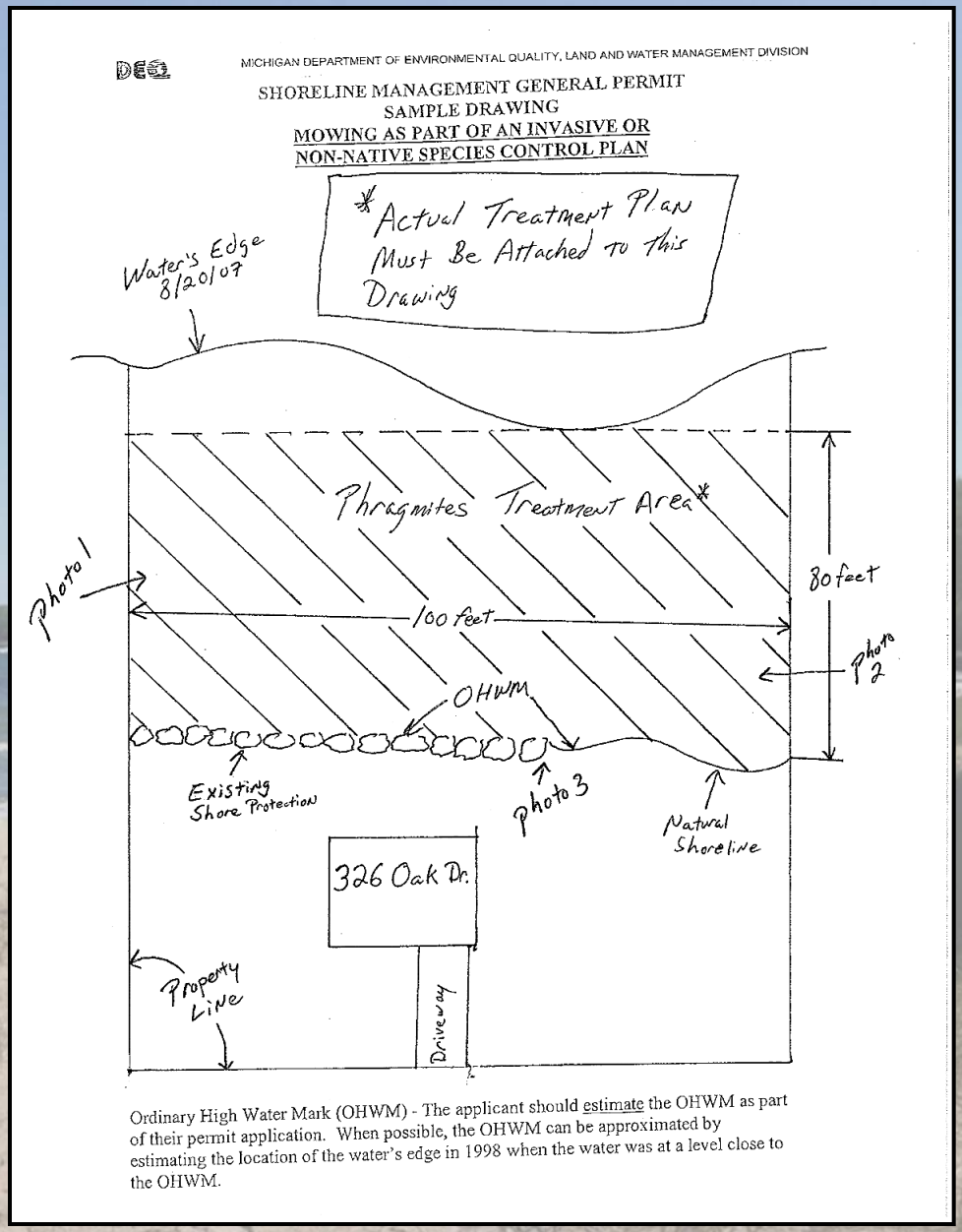
Sample Drawing

Phragmites Management Project Site Plan



DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, LAND AND WATER MANAGEMENT DIVISION

SHORELINE MANAGEMENT GENERAL PERMIT
SAMPLE DRAWING
MOWING AS PART OF AN INVASIVE OR NON-NATIVE SPECIES CONTROL PLAN

*Actual Treatment Plan Must Be Attached to this Drawing

Water's Edge 8/20/07

Phragmites Treatment Area*

Photo 1

100 feet

80 feet

Photo 2

OHWM

Existing Shore Protection

Photo 3

Natural Shoreline

326 Oak Dr.

Property Line

Driveway

Ordinary High Water Mark (OHWM) - The applicant should estimate the OHWM as part of their permit application. When possible, the OHWM can be approximated by estimating the location of the water's edge in 1998 when the water was at a level close to the OHWM.

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Management Recommendations

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- Control plan & follow-up
- ***Materials & Outreach***

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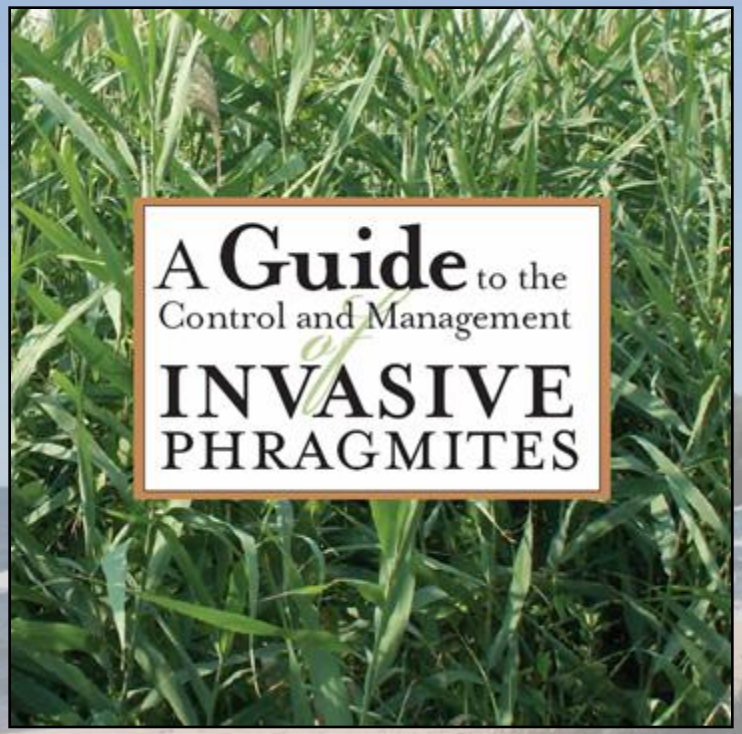
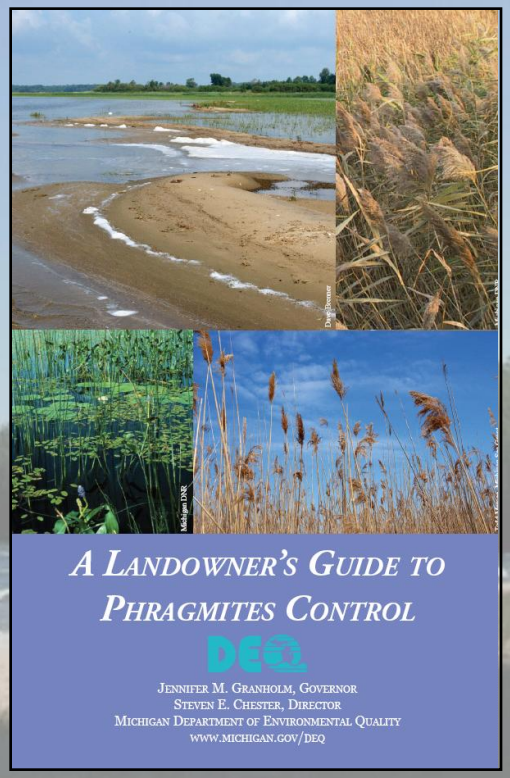
Educational Materials



(More comprehensive;
Recently updated; many copies available)



(Less comprehensive;
Very few copies available;
needs to be updated or eliminated)

www.michigan.gov/deqaquaticinvasives

(Control and Management of Invasive Phragmites)

Recent Legislation - 2012

Public Act 247 of 2012 was passed by the legislature, and became effective on July 2, 2012. This act exempts:

1. Mowing of vegetation below the Ordinary High Water Mark of the Great Lakes, and above the water's edge.
2. In areas of unconsolidated material predominantly composed of sand, rock or pebbles (*which are areas where under normal circumstances vegetation is non-existent, very sparse, or consists predominantly of plant species not typically adapted to wetland conditions*):
   a. Leveling of sand;
   b. Grooming of sand or pebbles;
   c. Removal of vegetation.

These exemptions do not apply to St Clair Flats (lands included in the survey of the delta of the St. Clair River, located within Clay Township, St. Clair County, as provided for in 1899 PA 175).

Possible Effects on Phragmites

1. Widespread expansion of Phragmites mowing without proper Phragmites management plan.
2. Reduction in herbicide treatment of Phragmites due to cost and regulations that can be avoided by un-regulated mowing only.
3. Spread of Phragmites by broken rhizomes and seeds.
4. Tilling and removal of phragmites, without a permit (this is not exempt).
5. Destruction of native vegetation and coastal wetland habitat, in non-Phragmites dominated areas.
   a) Conversion to non-wetland uses such as lawn, or eventually bare soil through vegetation removal and grooming activities.
   b) Impacted wetlands are particularly vulnerable to infestation by other invasive plant species.

Next Steps

- Promote our existing education and outreach materials
  - *A Guide to the Control and Management of Invasive Phragmites*
- Public Educational Meetings on Recommended Phragmites Management Planning and Techniques

- Website Updates to provide clear and useful information to the public
- Encourage landowners to work with existing local Phragmites management efforts to ensure proper and effective implementation

www.mi.gov/wetlands

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